FUJI.066

2

AMENDMENT TO THE CLAIMS

Please amend the claims as follows:

1. (Original) A method for holographic recording and reproducing comprising a recording process and a reproducing process,

the recording process including the steps of:

generating a signal beam by spatially modulating a coherent reference beam in accordance with information to be recorded;

illuminating with the signal beam a recording medium made of a photosensitive material to allow the signal beam to pass through said recording medium; and

creating a diffraction grating area recorded by a light interference pattern in a portion where a 0th-order beam and a diffraction beam of the signal beam interfere with each other inside said recording medium; and

the reproducing process including the step of:

illuminating said diffraction grating area with said reference beam to generate a reproduced wave corresponding to the signal beam.

2. (Original) The method for holographic recording and reproducing according to claim 1, further comprising an incident-light-processing area provided in said recording medium on an opposite side of an entrance surface of the recording medium on which the signal beam is incident, the incident-light-processing area separating the 0th-order beam and the diffraction

FUJI.066

3

medium.

3. (Original) The method for holographic recording and reproducing according to claim 2,

further comprising a line-like track formed in a part of said incident-light-processing area.

beam from each other to return a part of the incident beam to the inside of said recording

4. (Original) The method for holographic recording and reproducing according to claim 3,

wherein said track has positioning information of said incident-light-processing area with respect

to said recording medium.

5. (Original) The method for holographic recording and reproducing according to claim 2,

wherein said incident-light-processing area comprises a 0th-order-beam-processing area and a

diffraction-beam-reflecting area, the 0th-order-beam-processing area allowing the 0th-order beam

to pass through or scattering the 0th-order beam or deflecting the 0th-order beam or absorbing

the 0th-order beam, the diffraction-beam-reflecting area defining the 0th-order-beam-processing

area and reflecting the diffraction beam.

6. (Original) The method for holographic recording and reproducing according to claim 2,

wherein said incident-light-processing area comprises a 0th-order-beam-processing area and a

diffraction-beam-reflecting area, the 0th-order-beam-processing area reflecting the 0th-order

beam or scattering the 0th-order beam or deflecting the 0th-order beam or absorbing the 0th-

order beam, the diffraction-beam-reflecting area defining the 0th-order-beam-processing area and

FUJI.066

allowing the diffraction beam to pass through.

7. (Original) The method for holographic recording and reproducing according to claim 2, wherein said incident-light-processing area comprises a 0th-order-beam-processing area and a diffraction-beam-reflecting area, the 0th-order-beam-processing area reflecting the 0th-order beam or scattering the 0th-order beam or deflecting the 0th-order beam or allowing the 0th-order beam to pass through, the diffraction-beam-reflecting area defining the 0th-order-beam-processing area and absorbing the diffraction beam.

4

- 8. (Currently Amended) The method for holographic recording and reproducing according to any one of claims 5 to 7 claim 5, further comprising a spatial light modulator including a rows and columns matrix of pixels to spatially modulate the reference beam, wherein said spatial light modulator and said recording medium are relatively disposed in such a manner that said 0th-order-beam-processing area is not illuminated with the diffraction beam of the signal beam.
- 9. (Original) The method for holographic recording and reproducing according to claim 8, wherein said spatial light modulator and said recording medium are relatively disposed with respect to an optical axis of the signal beam in such a manner that an extending direction of a row or a column of said spatial light modulator makes a predetermined angle of θ ($\theta \neq 0$) with an extending direction of said 0th-order-beam-processing area.

FUJI.066

10. (Original) The method for holographic recording and reproducing according to claim

5

6, wherein the reproduced wave is output from the opposite side of the entrance surface of the

recording medium on which the signal beam is incident, in the reproducing process.

11. (Currently Amended) A method for holographic recording comprising the steps of:

generating a signal beam by spatially modulating a coherent reference beam in

accordance with information to be recorded;

illuminating with the signal beam a recording medium made of a photosensitive material

to allow the signal beam to pass through said recording medium; and

creating a diffraction grating area recorded by a light interference pattern in a portion

where a 0th-order beam and a diffraction beam of the signal beam interfere with each other inside

said recording medium.

12. (Original) The method for recording a hologram according to claim 11, further

comprising an incident-light-processing area provided in said recording medium on an opposite

side of an entrance surface of the recording medium on which the signal beam is incident, the

incident-light-processing area separating the 0th-order beam and the diffraction beam from each

other to return a part of the incident beam to the inside of said recording medium.

13. (Original) The method for recording a hologram according to claim 12, further

comprising a line-like track formed in a part of said incident-light-processing area.

FUJI.066

14. (Original) The method for recording a hologram according to claim 13, wherein said

6

track has positioning information of said incident-light-processing area with respect to said

recording medium.

15. (Original) The method for recording a hologram according to claim 12, wherein said

incident-light-processing area comprises a 0th-order-beam-processing area and a diffraction-

beam-reflecting area, the 0th-order-beam-processing area allowing the 0th-order beam to pass

through or scattering the 0th-order beam or deflecting the 0th-order beam or absorbing the 0th-

order beam, the diffraction-beam-reflecting area defining the 0th-order-beam-processing area and

reflecting the diffraction beam.

16. (Original) The method for recording a hologram according to claim 12, wherein said

incident-light-processing area comprises a 0th-order-beam-processing area and a diffraction-

beam-reflecting area, the 0th-order-beam-processing area reflecting the 0th-order beam or

scattering the 0th-order beam or deflecting the 0th-order beam or absorbing the 0th-order beam,

the diffraction-beam-reflecting area defining the 0th-order-beam-processing area and allowing

the diffraction beam to pass through.

17. (Original) The method for recording a hologram according to claim 12, wherein said

incident-light-processing area comprises a 0th-order-beam-processing area and a diffraction-

beam-reflecting area, the 0th-order-beam-processing area reflecting the 0th-order beam or

scattering the 0th-order beam or deflecting the 0th-order beam or allowing the 0th-order beam to

FUJI.066

pass through, the diffraction-beam-reflecting area defining the 0th-order-beam-processing area

7

and absorbing the diffraction beam.

18. (Currently Amended) The method for recording a hologram according to any one of

claims 15 to 17 claim 15, further comprising a spatial light modulator including a rows and

columns matrix of pixels to spatially modulate the reference beam, wherein said spatial light

modulator and said recording medium are relatively disposed in such a manner that said 0th-

order-beam-processing area is not illuminated with the diffraction beam of the signal beam.

19. (Original) The method for recording a hologram according to claim 18, wherein said

spatial light modulator and said recording medium are relatively disposed with respect to an

optical axis of the signal beam in such a manner that an extending direction of a row or a column

of said spatial light modulator makes a predetermined angle of θ ($\theta \neq 0$) with an extending

direction of said 0th-order-beam-processing area.

20. (Currently Amended) A method for holographic reproducing comprising the steps of:

providing a recording medium made of a photosensitive material having a diffraction

grating area formed through a recording process including the steps of: generating a signal beam

by spatially modulating a coherent reference beam in accordance with information to be

recorded; and illuminating with the signal beam the recording medium to allow the signal beam

to pass through said recording medium so as to form the diffraction grating area recorded by a

light interference pattern in a portion where a 0th-order beam and a diffraction beam of the signal

FUJI.066

beam interfere with each other inside said recording medium; and

illuminating a coherent reference beam to the diffraction grating area to generate a reproduced wave corresponding to the signal beam.

8

- 21. (Original) The method for reproducing a hologram according to claim 20, further comprising an incident-light-processing area provided in said recording medium on an opposite side of an entrance surface of the recording medium on which the signal beam is incident, the incident-light-processing area separating the 0th-order beam and the diffraction beam from each other to return a part of the incident beam to the inside of said recording medium.
- 22. (Original) The method for reproducing a hologram according to claim 21, further comprising a line-like track formed in a part of said incident-light-processing area.
- 23. (Original) The method for reproducing a hologram according to claim 22, wherein said track has positioning information of said incident-light-processing area with respect to said recording medium.
- 24. (Original) The method for reproducing a hologram according to claim 21, wherein said incident-light-processing area comprises a 0th-order-beam-processing area and a diffraction-beam-reflecting area, the 0th-order-beam-processing area allowing the 0th-order beam to pass through or scattering the 0th-order beam or deflecting the 0th-order beam or absorbing the 0th-order beam, the diffraction-beam-reflecting area defining the 0th-order-beam-processing area and

FUJI.066

reflecting the diffraction beam.

25. (Original) The method for reproducing a hologram according to claim 21, wherein said incident-light-processing area comprises a 0th-order-beam-processing area and a diffraction-beam-reflecting area, the 0th-order-beam-processing area reflecting the 0th-order beam or scattering the 0th-order beam or deflecting the 0th-order beam or absorbing the 0th-order beam, the diffraction-beam-reflecting area defining the 0th-order-beam-processing area and allowing the diffraction beam to pass through.

9

26. (Original) The method for reproducing a hologram according to claim 21, wherein said incident-light-processing area comprises a 0th-order-beam-processing area and a diffraction-beam-reflecting area, the 0th-order-beam-processing area reflecting the 0th-order beam or scattering the 0th-order beam or deflecting the 0th-order beam or allowing the 0th-order beam to pass through, the diffraction-beam-reflecting area defining the 0th-order-beam-processing area and absorbing the diffraction beam.

27. (Currently Amended) The method for reproducing a hologram according to any one of claims 24 to 26 claim 24, wherein the diffraction grating area of the recording medium is recorded by using a spatial light modulator including a rows and columns matrix of pixels in such a manner that said spatial light modulator and said recording medium are relatively disposed so that said 0th-order-beam-processing area is not illuminated with the diffraction beam of the signal beam.

FUJI.066

10

28. (Original) The method for reproducing a hologram according to claim 27, wherein

said spatial light modulator and said recording medium are relatively disposed with respect to an

optical axis of the signal beam in such a manner that an extending direction of a row or a column

of said spatial light modulator makes a predetermined angle of θ ($\theta \neq 0$) with an extending

direction of said 0th-order-beam-processing area.

29. (Original) The method for reproducing a hologram according to claim 25, wherein the

reproduced wave is output from the opposite side of the entrance surface of the recording

medium on which the signal beam is incident, in the reproducing process.

30. (Original) A holographic recording and reproducing apparatus for recording

information as a diffraction grating area in a recording medium, and for reproducing said

recorded information from said diffraction grating area, said holographic recording and

reproducing apparatus comprising:

a holding section for detachably holding a recording medium made of a photosensitive

material;

a light source for generating a coherent reference beam;

a signal beam generating unit including a spatial light modulator, said spatial light

modulator spatially modulating said reference beam in accordance with said information to be

recorded to generate a signal beam;

an interference unit including an illuminating optical system for illuminating the recording

medium with the signal beam to allow it to enter into and pass through said recording medium,

FUJI.066

11

said illuminating optical system creating a diffraction grating area according to a light interference pattern in a portion where a 0th-order beam and a diffraction beam of the signal beam interfere with each other inside said recording medium, and said illuminating optical system illuminating said diffraction grating area with said reference beam to generate a reproduced wave corresponding to the signal beam; and

a detecting unit for detecting said recorded information formed into an image by the reproduced wave.

- 31. (Original) The holographic recording and reproducing apparatus according to claim 30, further comprising an incident-light-processing area provided in said recording medium on an opposite side of an entrance surface of the recording medium on which the signal beam is incident, the incident-light-processing area separating the 0th-order beam and the diffraction beam from each other to return a part of the incident beam to the inside of said recording medium.
- 32. (Original) The holographic recording and reproducing apparatus according to claim 31, further comprising a line-like track formed in a part of said incident-light-processing area.
- 33. (Original) The holographic recording and reproducing apparatus according to claim 32, wherein said track has positioning information of said incident-light-processing area with respect to said recording medium.
 - 34. (Original) The holographic recording and reproducing apparatus according to claim 31,

FUJI.066

12

wherein said incident-light-processing area comprises a 0th-order-beam-processing area and a

diffraction-beam-reflecting area, the 0th-order-beam-processing area allowing the 0th-order beam

to pass through or scattering the 0th-order beam or deflecting the 0th-order beam or absorbing the

0th-order beam, the diffraction-beam-reflecting area defining the 0th-order-beam-processing area

and reflecting the diffraction beam.

35. (Original) The holographic recording and reproducing apparatus according to claim 31,

wherein said incident-light-processing area comprises a 0th-order-beam-processing area and a

diffraction-beam-reflecting area, the 0th-order-beam-processing area reflecting the 0th-order beam

or scattering the 0th-order beam or deflecting the 0th-order beam or absorbing the 0th-order beam,

the diffraction-beam-reflecting area defining the 0th-order-beam-processing area and allowing the

diffraction beam to pass through.

36. (Original) The holographic recording and reproducing apparatus according to claim 31,

wherein said incident-light-processing area comprises a 0th-order-beam-processing area and a

diffraction-beam-reflecting area, the 0th-order-beam-processing area reflecting the 0th-order beam

or scattering the 0th-order beam or deflecting the 0th-order beam or allowing the 0th-order beam

to pass through, the diffraction-beam-reflecting area defining the 0th-order-beam-processing area

and absorbing the diffraction beam.

37. (Currently Amended) The holographic recording and reproducing apparatus according

to any one of claims 34 to 36 claim 34, further comprising a spatial light modulator including a

FUJI.066

13

rows and columns matrix of pixels to spatially modulate the reference beam, wherein said spatial light modulator and said recording medium are relatively disposed in such a manner that said 0th-

order-beam-processing area is not illuminated with the diffraction beam of the signal beam.

38. (Original) The holographic recording and reproducing apparatus according to claim 37,

wherein said spatial light modulator and said recording medium are relatively disposed with

respect to an optical axis of the signal beam in such a manner that an extending direction of a row

or a column of said spatial light modulator makes a predetermined angle of θ ($\theta \neq 0$) with an

extending direction of said 0th-order-beam-processing area.

39. (Original) The holographic recording and reproducing apparatus according to claim 35,

wherein the reproduced wave is output from the opposite side of the entrance surface of the

recording medium on which the signal beam is incident.

40. (Currently Amended) The holographic recording and reproducing apparatus according

to claim 34 or 36, further comprising a splitting unit separating the reproduced wave from an

optical path of the reference beam.

41. (Original) A holographic recording apparatus for recording information as a diffraction

grating area in a recording medium, comprising:

a holding section for detachably holding a recording medium made of a photosensitive

material;

FUJI.066

a light source for generating a coherent reference beam;

a signal beam generating unit including a spatial light modulator, said spatial light

modulator spatially modulating said reference beam in accordance with said information to be

recorded to generate a signal beam; and

an interference unit including an illuminating optical system for illuminating the recording

medium with the signal beam to allow it to enter into and pass through said recording medium,

said illuminating optical system creating a diffraction grating area according to a light interference

pattern in a portion where a 0th-order beam and a diffraction beam of the signal beam interfere

with each other inside said recording medium.

42. (Original) The holographic recording apparatus according to claim 41, wherein the

recording medium comprises an incident-light-processing area provided in said recording medium

on an opposite side of an entrance surface of the recording medium on which the signal beam is

incident, the incident-light-processing area separating the 0th-order beam and the diffraction beam

from each other to return a part of the incident beam to the inside of said recording medium.

43. (Original) The holographic recording apparatus according to claim 42, further

comprising a line-like track formed in a part of said incident-light-processing area.

44. (Original) The holographic recording apparatus according to claim 43, wherein said

track has positioning information of said incident-light-processing area with respect to said

recording medium.

FUJI.066

45. (Original) The holographic recording apparatus according to claim 42, wherein said incident-light-processing area comprises a 0th-order-beam-processing area and a diffraction-beam-reflecting area, the 0th-order-beam processing area allowing the 0th-order beam to pass through or scattering the 0th-order beam or deflecting the 0th-order beam or absorbing the 0th-order beam, the diffraction-beam-reflecting area defining the 0th-order-beam-processing area and reflecting the diffraction beam.

15

46. (Original) The holographic recording apparatus according to claim 42, wherein said incident-light-processing area comprises a 0th-order-beam-processing area and a diffraction-beam-reflecting area, the 0th-order-beam-processing area reflecting the 0th-order beam or scattering the 0th-order beam or deflecting the 0th-order beam or absorbing the 0th-order beam, the diffraction-beam-reflecting area defining the 0th-order-beam-processing area and allowing the diffraction beam to pass through.

47. (Original) The holographic recording apparatus according to claim 42, wherein said incident-light-processing area comprises a 0th-order-beam-processing area and a diffraction-beam-reflecting area, the 0th-order-beam-processing area reflecting the 0th-order beam or scattering the 0th-order beam or deflecting the 0th-order beam or allowing the 0th-order beam to pass through, the diffraction-beam-reflecting area defining the 0th-order-beam-processing area and absorbing the diffraction beam.

FUJI.066

48. (Currently Amended) The holographic recording apparatus according to any one of claims 45 to 47 claim 45, further comprising a spatial light modulator including a rows and columns matrix of pixels to spatially modulate the reference beam, wherein said spatial light modulator and said recording medium are relatively disposed in such a manner that said 0th-order-beam-processing area is not illuminated with the diffraction beam of the signal beam.

16

49. (Original) The holographic recording apparatus according to claim 48, wherein said spatial light modulator and said recording medium are relatively disposed with respect to an optical axis of the signal beam in such a manner that an extending direction of a row or a column of said spatial light modulator makes a predetermined angle of θ ($\theta \neq 0$) with an extending direction of said 0th-order-beam-processing area.

50. (Original) A holographic reproducing apparatus for reproducing information recorded as a diffraction grating area in a recording medium, the reproducing apparatus comprising:

a holding section for detachably holding a recording medium made of a photosensitive material;

a light source for generating a coherent reference beam;

an illuminating unit including an illuminating optical system for illuminating the recording medium with the reference beam to allow it to enter into and pass through the diffraction grating area in the recording medium to generate a reproduced wave corresponding to the signal beam; and

a detecting unit for detecting said recorded information formed into an image by the

FUJI.066

reproduced wave.

51. (Original) The holographic reproducing apparatus according to claim 50, wherein the

recording medium comprises an incident-light-processing area provided in said recording medium

17

on an opposite side of an entrance surface of the recording medium on which the signal beam is

incident, the incident-light-processing area separating the 0th-order beam and the diffraction beam

from each other to return a part of the incident beam to the inside of said recording medium.

52. (Original) The holographic reproducing apparatus according to claim 51, further

comprising a line-like track formed in a part of said incident-light-processing area.

53. (Original) The holographic reproducing apparatus according to claim 52, wherein said

track has positioning information of said incident-light-processing area with respect to said

recording medium.

54. (Original) The holographic reproducing apparatus according to claim 51, wherein said

incident-light-processing area comprises a 0th-order-beam-processing area and a diffraction-

beam-reflecting area, the 0th-order-beam-processing area allowing the 0th-order beam to pass

through or scattering the 0th-order beam or deflecting the 0th-order beam or absorbing the 0th-

order beam, the diffraction-beam-reflecting area defining the 0th-order-beam-processing area and

reflecting the diffraction beam.

FUJI.066

55. (Original) The holographic reproducing apparatus according to claim 51, wherein said

18

incident-light-processing area comprises a 0th-order-beam-processing area and a diffraction-

beam-reflecting area, the 0th-order-beam-processing area reflecting the 0th-order beam or

scattering the 0th-order beam or deflecting the 0th-order beam or absorbing the 0th-order beam,

the diffraction-beam-reflecting area defining the 0th-order-beam-processing area and allowing the

diffraction beam to pass through.

56. (Original) The holographic reproducing apparatus according to claim 51, wherein said

incident-light-processing area comprises a 0th-order-beam-processing area and a diffraction-

beam-reflecting area, the 0th-order-beam-processing area reflecting the 0th-order beam or

scattering the 0th-order beam or deflecting the 0th-order beam or allowing the 0th-order beam to

pass through, the diffraction-beam-reflecting area defining the 0th-order-beam-processing area

and absorbing the diffraction beam.

57. (Currently Amended) The holographic reproducing apparatus according to any one of

claims 54 to 56 claim 54, wherein the diffraction grating area of the recording medium is recorded

by using a spatial light modulator including a rows and columns matrix of pixels in such a manner

that said spatial light modulator and said recording medium are relatively disposed so that said

0th-order-beam-processing area is not illuminated with the diffraction beam of the signal beam.

58. (Original) The holographic reproducing apparatus according to claim 57, wherein said

spatial light modulator and said recording medium are relatively disposed with respect to an

FUJI.066

optical axis of the signal beam in such a manner that an extending direction of a row or a column

19

of said spatial light modulator makes a predetermined angle of θ ($\theta \neq 0$) with an extending

direction of said 0th-order-beam-processing area.

59. (Original) The holographic reproducing apparatus according to claim 55, wherein the

reproduced wave is output from the opposite side of the entrance surface of the recording medium

on which the signal beam is incident.

60. (Currently Amended) The holographic reproducing apparatus according to claim 54 or

56, further comprising a splitting unit separating the reproduced wave from an optical path of the

reference beam.

61. (Original) A recording medium made of a photosensitive material capable of being

recorded by illumination with a coherent light beam, comprising an incident-light-processing area

provided in said recording medium on an opposite side of an entrance surface of the recording

medium on which the light beam is incident, the incident-light-processing area separating a 0th-

order beam and a diffraction beam of the light beam from each other to return a part of the

incident beam to the inside of said recording medium.

62. (Original) The recording medium according to claim 61, further comprising a line-like

track formed in a part of said incident-light-processing area.

FUJI.066

63. (Original) The recording medium according to claim 62, wherein said track has

20

positioning information of said incident-light-processing area with respect to said recording

medium.

64. (Original) The recording medium according to claim 61, wherein said incident-light-

processing area comprises a 0th-order-beam-processing area and a diffraction-beam-reflecting

area, the 0th-order-beam-processing area allowing the 0th-order beam to pass through or

scattering the 0th-order beam or deflecting the 0th-order beam or absorbing the 0th-order beam,

the diffraction-beam-reflecting area defining the 0th-order-beam-processing area and reflecting

the diffraction

beam.

65. (Original) The recording medium according to claim 61, wherein said incident-light-

processing area comprises a 0th-order-beam-processing area and a diffraction-beam-reflecting

area, the 0th-order-beam-processing area reflecting the 0th-order beam or scattering the 0th-order

beam or deflecting the 0th-order beam or absorbing the 0th-order beam, the diffraction-beam-

reflecting area defining the 0th-order-beam-processing area and allowing the diffraction beam to

pass through.

66. (Original) The recording medium according to claim 61, wherein said incident-light-

processing area comprises a 0th-order-beam-processing area and a diffraction-beam-reflecting

area, the 0th-order-beam-processing area reflecting the 0th-order beam or scattering the 0th-order

FUJI.066

diffraction beam.

21

beam or deflecting the 0th-order beam or allowing the 0th-order beam to pass through, the diffraction-beam-reflecting area defining the 0th-order-beam-processing area and absorbing the

67. (Original) A holographic recording and reproducing apparatus for recording information as a diffraction grating area in a recording medium, and for reproducing said recorded information from said diffraction grating area, said holographic recording and reproducing apparatus comprising:

a holding section for detachably holding a recording medium made of a photosensitive material;

a light source for generating a coherent reference beam;

a signal beam generating unit including a spatial light modulator, said spatial light modulator spatially modulating said reference beam in accordance with said information to be recorded to generate a signal beam;

an interference unit including an illuminating optical system for illuminating the recording medium with the signal beam to allow it to enter into and pass through said recording medium, said illuminating optical system creating a diffraction grating area according to a light interference pattern in a portion where a 0th-order beam and a diffraction beam of the signal beam interfere with each other inside said recording medium, and said illuminating optical system illuminating said diffraction grating area with said reference beam to generate a reproduced wave corresponding to the signal beam;

an incident-light-processing area provided adjacent to an opposite side of an entrance

FUJI.066

processing area separating the 0th-order beam and the diffraction beam from each other to return a

surface of the recording medium on which the signal beam is incident, the incident-light-

22

part of the incident beam to the inside of said recording medium; and

a detecting unit for detecting said recorded information formed into an image by the

reproduced wave.

68. (Original) The holographic recording and reproducing apparatus according to claim 67,

wherein said incident-light-processing area comprises a 0th-order-beam-processing area and a

diffraction-beam-reflecting area, the 0th-order-beam-processing area allowing the 0th-order beam

to pass through or scattering the 0th-order beam or deflecting the 0th-order beam or absorbing the

0th-order beam, the diffraction-beam-reflecting area defining the 0th-order-beam-processing area

and reflecting the diffraction beam.

69. (Original) The holographic recording and reproducing apparatus according to claim 67,

wherein said incident-light-processing area comprises a 0th-order-beam-processing area and a

diffraction-beam-reflecting area, the 0th-order-beam-processing area reflecting the 0th-order beam

or scattering the 0th-order beam or deflecting the 0th-order beam or absorbing the 0th-order beam.

the diffraction-beam-reflecting area defining the 0th-order-beam-processing area and allowing the

diffraction beam to pass through.

70. (Original) The holographic recording and reproducing apparatus according to claim 67,

wherein said incident-light-processing area comprises a 0th-order-beam-processing area and a

FUJI.066

23

diffraction-beam-reflecting area, the 0th-order-beam-processing area reflecting the 0th-order beam or scattering the 0th-order beam or deflecting the 0th-order beam or allowing the 0th-order beam to pass through, the diffraction-beam-reflecting area defining the 0th-order beam-processing area and absorbing the diffraction beam.

- 71. (Original) The holographic recording and reproducing apparatus according to claim 67, wherein said spatial light modulator includes a rows and columns matrix of pixels and wherein said spatial light modulator and said recording medium are relatively disposed with respect to an optical axis of the signal beam in such a manner that an extending direction of a row or a column of said spatial light modulator makes a predetermined angle of θ ($\theta \neq 0$) with an extending direction of said 0th-order-beam-processing area.
- 72. (Original) The holographic recording and reproducing apparatus according to claim 69, wherein the reproduced wave is output from the opposite side of the entrance surface of the recording medium on which the signal beam is incident.
- 73. (Currently Amended) The holographic recording and reproducing apparatus according to <u>claim 68</u> or 70, further comprising a splitting unit separating the reproduced wave from an optical path of the reference beam.
- 74. (Original) A holographic recording apparatus for recording information as a diffraction grating area in a recording medium, comprising:

FUJI.066

24

a holding section for detachably holding a recording medium made of a photosensitive material;

a light source for generating a coherent reference beam;

a signal beam generating unit including a spatial light modulator, said spatial light modulator spatially modulating said reference beam in accordance with said information to be recorded to generate a signal beam;

an interference unit including an illuminating optical system for illuminating the recording medium with the signal beam to allow it to enter into and pass through said recording medium, said illuminating optical system creating a diffraction grating area according to a light interference pattern in a portion where a 0th-order beam and a diffraction beam of the signal beam interfere with each other inside said recording medium; and

an incident-light-processing area provided adjacent to an opposite side of an entrance surface of the recording medium on which the signal beam is incident, the incident-light-processing area separating the 0th-order beam and the diffraction beam from each other to return a part of the incident beam to the inside of said recording medium.

75. (Original) The holographic recording apparatus according to claim 74, wherein said incident-light-processing area comprises a 0th-order-beam-processing area and a diffraction-beam-reflecting area, the 0th-order-beam-processing area allowing the 0th-order beam to pass through or scattering the 0th-order beam or deflecting the 0th-order beam or absorbing the 0th-order beam, the diffraction-beam-reflecting area defining the 0th-order-beam-processing area and reflecting the diffraction beam.

FUJI.066

25

76. (Original) The holographic recording apparatus according to claim 74, wherein said incident-light-processing area comprises a 0th-order-beam-processing area and a diffraction-beam-reflecting area, the 0th-order-beam-processing area reflecting the 0th-order beam or scattering the 0th-order beam or deflecting the 0th-order beam or absorbing the 0th-order beam, the diffraction-beam-reflecting area defining the 0th-order-beam-processing area and allowing the diffraction beam to pass through.

77. (Original) The holographic recording apparatus according to claim 74, wherein said incident-light-processing area comprises a 0th-order-beam-processing area and a diffraction-beam-reflecting area, the 0th-order-beam-processing area reflecting the 0th-order beam or scattering the 0th-order beam or deflecting the 0th-order beam or allowing the 0th-order beam to pass through, the diffraction-beam-reflecting area defining the 0th-order-beam-processing area and absorbing the diffraction beam.

78. (Original) The holographic recording apparatus according to claim 74, wherein said spatial light modulator includes a rows and columns matrix of pixels and wherein said spatial light modulator and said recording medium are relatively disposed with respect to an optical axis of the signal beam in such a manner that an extending direction of a row or a column of said spatial light modulator makes a predetermined angle of θ ($\theta \neq 0$) with an extending direction of said 0th-order-beam-processing area.

FUJI.066

79. (Original) A holographic reproducing apparatus for reproducing information recorded

26

as a diffraction grating area in a recording medium, the reproducing apparatus comprising:

a holding section for detachably holding a recording medium made of a photosensitive

material;

a light source for generating a coherent reference beam;

an illuminating unit including an illuminating optical system for illuminating the recording

medium with the reference beam to allow it to enter into and pass through the diffraction grating

area in the recording medium to generate a reproduced wave corresponding to the signal beam;

an incident-light-processing area provided adjacent to an opposite side of an entrance

surface of the recording medium on which the signal beam is incident, the incident-light-

processing area separating the 0th-order beam and the diffraction beam from each other to return a

part of the incident beam to the inside of said recording medium; and

a detecting unit for detecting said recorded information formed into an image by the

reproduced wave.

80. (Original) The holographic reproducing apparatus according to claim 79, wherein said

incident-light-processing area comprises a 0th-order-beam-processing area and a diffraction-

beam-reflecting area, the 0th-order-beam-processing area allowing the 0th-order beam to pass

through or scattering the 0th-order beam or deflecting the 0th-order beam or absorbing the 0th-

order beam, the diffraction-beam-reflecting area defining the 0th-order-beam-processing area and

reflecting the diffraction beam.

FUJI.066

81. (Original) The holographic reproducing apparatus according to claim 79, wherein said

27

incident-light-processing area comprises a 0th-order-beam-processing area and a diffraction-

beam-reflecting area, the 0th-order-beam-processing area reflecting the 0th-order beam or

scattering the 0th-order beam or deflecting the 0th-order beam or absorbing the 0th-order beam,

the diffraction-beam-reflecting area defining the 0th-order-beam-processing area and allowing the

diffraction beam to pass through.

82. (Original) The holographic reproducing apparatus according to claim 79, wherein said

incident-light-processing area comprises a 0th-order-beam-processing area and a diffraction-

beam-reflecting area, the 0th-order-beam-processing area reflecting the 0th-order beam or

scattering the 0th-order beam or deflecting the 0th-order beam or allowing the 0th-order beam to

pass through, the diffraction-beam-reflecting area defining the 0th-order-beam-processing area

and absorbing the diffraction beam.

83. (Currently Amended) The holographic reproducing apparatus according to any one of

claims 80 to 82 claim 80, wherein the diffraction grating area of the recording medium is recorded

by using a spatial light modulator including a rows and columns matrix of pixels in such a manner

that said spatial light modulator and said recording medium are relatively disposed so that said

0th-order-beam-processing area is not illuminated with the diffraction beam of the signal beam.

84. (Original) The holographic reproducing apparatus according to claim 83, wherein said

spatial light modulator and said recording medium are relatively disposed with respect to an

FUJI.066

28

optical axis of the signal beam in such a manner that an extending direction of a row or a column of said spatial light modulator makes a predetermined angle of θ ($\theta \neq 0$) with an extending direction of said 0th-order-beam-processing area.

85. (Original) The holographic reproducing apparatus according to claim 81, wherein the reproduced wave is output from the opposite side of the entrance surface of the recording medium on which the signal beam is incident, in the reproducing process.

86. (Currently Amended) The holographic reproducing apparatus according to <u>claim 80</u> or 82, further comprising a splitting unit separating the reproduced wave from an optical path of the reference beam.